

instrument, but the insulation in the "cut-out" was consumed; 5th, the electric charges entered the office several times during the day, exhibiting the same peculiarities as on the 4th. Jacksboro', Tex., 25th. Stockton, Tex., 15th, 16th, 24th. Fort Quitman, Tex., 24th, 25th, during thunder-storms, compelled to cut out instruments. Dayton, Wash. Ty., 16th, 5 p. m., during rain storm, the telegraph wires were so powerfully charged with electricity from a passing cloud that the line could be worked between Dayton and Pomeroy without the aid of a battery. Umatilla, Or., 28th, air so charged with electricity that a shock could be felt by touching the stone pipe on telegraph wire. Fort Yates, Dak., 4th, electric storm.

THUNDER STORMS.

There were reported in the various districts on the following dates:

Middle Atlantic States: 12th, 15th, 18th, 20th, 27th.

South Atlantic States: 1st, 6th, 10th, 12th, 15th, 16th, 27th, 28th.

Florida Peninsula: 1st.

East Gulf States: 6th to 9th, 12th, 15th, 16th, 18th, 21st, 26th, 27th.

West Gulf States: 4th, 5th, 8th, 12th, 15th to 20th, 26th, 27th, 29th, 31st.

Rio Grande Valley: 6th, 7th, 20th.

Ohio Valley and Tennessee: 3d to 6th, 9th, 11th, 14th to 21st, 23d, 25th to 29th.

Lower Lake Region: 15th, 18th, 27th, 29th, 30th.

Upper Lake Region: 4th, 5th, 7th, 17th, 18th, 20th, 25th, 26th, 29th.

Upper Mississippi Valley: 3d, 4th, 5th, 9th, 11th, 12th, 14th, 16th to 25th, 26th, 27th.

Missouri Valley: 3d, 4th, 5th, 7th, 8th, 9th, 11th to 15th, 17th to 20th, 24th to 27th, 31st.

Middle Slope: 23d, 25th, 26th, 27th.

Southern Slope: 5th to 8th, 15th, 16th, 18th, 19th, 20th, 24th, 25th.

Southern Plateau: 24th, 25th.

Middle Pacific Coast Region: 15th, 16th.

They were also reported from the following stations, not included in the above districts: St. Vincent, Minn., 17th; Ft. Sisseton, Dak., 4th; Deadwood, Dak., 4th, 5th; Dayton, Wash. Ty., 1st; San Buenaventura, Cal., 13th.

During thunderstorms, the following instances of damage by lightning occurred: Springfield, Ill., 27th, cow killed by lightning. San Francisco, Cal., 15th, as the pilot boat "Lady Mine" was proceeding to sea, and had reached the bar, she was struck by lightning, and her main-top-mast and main-mast-head, were shivered. This is the first case on record of damage by lightning to a vessel in or near this port. Charleston, Ill., 17th, a hickory tree was struck and shattered. At the fair grounds, one mile west of Court House, a two year old child was knocked insensible. Cresco, Ia., 17th, barn struck by lightning, killing two horses and one cow.

OPTICAL PHENOMENA.

SOLAR HALOS.

Solar halos have been observed in the various districts on the following dates: New England, 2d, 5th, 9th, 11th, 15th, 18th, 20th, 26th, 28th, 29th; Middle Atlantic states, 5th, 6th, 7th, 8th, 12th, 15th, 18th, 29th, 31st; South Atlantic states, 9th, 10th, 11th, 17th, 26th; Florida peninsula, 25th, 29th; East Gulf states, 3d, 17th, 19th, 22d, 24th, 25th; West Gulf states, 4th, 11th, 24th; Ohio valley and Tennessee, 2d, 3d, 4th, 6th, 7th, 8th, 11th to 14th, 17th, 18th, 19th, 23d, 24th, 26th, 27th to 31st; lower lake region, 5th, 7th, 8th, 9th, 11th, 14th, 15th, 17th, 20th, 25th, 29th, 31st; upper lake region, 1st, 4th, 11th, 14th, 19th, 28th, 29th; Upper Mississippi valley, 1st, 2d, 4th to 7th, 10th, 11th, 12th, 14th, 18th, 19th, 20th, 23d, 24th, 25th, 27th, 28th, 29th, 30th; Missouri valley, 1st, 5th to 9th, 11th, 13th, 20th, 23d, 24th, 29th; middle slope, 4th, 6th, 14th, 15th,

16th, 20th, 27th, 28th, 29th; northern plateau, 12th, 17th, 20th, 22d, 23d, 25th, 29th; middle plateau, 10th, 22d, 24th, 28th; Middle Pacific coast region, 6th, 12th, 22d to 26th, 28th; South Pacific coast region, 10th, 16th, 18th, 28th. They were also reported from the following stations, not included in the districts named above: St. Vincent, Minn., 30th; Helena, Mont., 27th, 28th; Florence and Tucson, Ariz., 10th; Albany, Or., 12th, 20th, 21st, 23d. Clinton, Ia., 2d, 3 p. m., an unusually conspicuous and brilliant halo of 22° radius was observed. Outside of this there was a part of a halo of much larger radius, while the parhelic circle extended parallel with the horizon, completely around the heavens. Fine parhelia were visible.

LUNAR HALOS.

Have been observed in the various districts on the following dates: New England, 6th, 8th, 9th, 23rd, 25th, 29th; Middle Atlantic states, 1st to 8th, 23d, 25th to 28th, 31st; South Atlantic states, 1st, 25th, 26th, 27th, 29th; Florida peninsula, 1st, 25th, 27th, 28th, 31st; East Gulf states, 22d, 27th, 28th; West Gulf states, 1st, 4th, 9th, 15th, 24th, 25th; Ohio valley and Tennessee, 1st, 3d, 4th, 6th to 9th, 11th, 14th, 21st, 23d, 27th to 31st; lower lake region, 1st to 5th, 8th, 9th, 25th, 28th, 31st; upper lake region, 1st, 2d, 19th, 22d, 23d, 24th, 27th, 28th, 29th, 31st; Upper Mississippi valley, 2d, 3d, 11th, 14th, 20th, 23d, 24th, 25th, 27th, 31st; Missouri valley, 1st, 2d, 3d, 23d to 29th; northern slope, 10th, 22d, 29th, 30th; middle slope, 10th, 25th, 28th, 29th; northern plateau, 1st, 29th, middle plateau, 1st, 2d, 4th, 8th, 10th, 24th; Middle Pacific coast region, 3d, 24th, 26th, 28th; South Pacific coast region, 2d, 3d, 11th. They were also reported from the following stations not included in the districts named above: Eagle Pass, Tex., 3d; Brownsville, Tex., 29th; Moorhead, Minn., 31st; El Paso, Tex., 12th; Florence, Ariz., 11th, 25th; Roseburg, Or., 6th. An exceptionally brilliant display occurred at Northfield, Minn., on the 29th. There were two rings; one around the moon, and the other passing through it. The circle around the moon showed the prismatic colors very distinctly; the other was white.

MIRAGE.

New Haven, 5th, a well defined mirage was observed over Long Island. The Island seemed unusually prominent and above it appeared its inverted image. Indianola, Tex., 8th, 28th. Olivet, Dak., 27th. Northport, Mich., 5th, 3 to 4 p. m.

MISCELLANEOUS PHENOMENA.

METEORS.

Davenport, 12th; Ft. Benton, Mont., 8th; Florence, Ariz., 24th; Yuma, Ariz., 29th; Vevay, Ind., 13th, 31st; Monticello, Ia., 22d; Holton, Kan., 10th; Woodstock, Md., 3d, 12th, 14th, 21st, 22d; Rowe, Mass., 19th; Freehold, N. J., 13th; Rio Vista, Cal., 27th.

POLAR BANDS.

St. Louis, 30th; Florence, Ariz., 13th; Riley, Ill., 29th; New Corydon, Ind., 1st, 3d, 12th, 19th, 23d, 29th, 30th; Yates Centre, Kan., 4th, 5th, 11th; Cornish, Me., 26th; Auburn, N. H., 5th, 8th; Atco, N. J. 29th; Wytheville, Va., 3d, 11th, 31st.

EARTHQUAKES.

San Diego, Cal., 11th, about 4 p. m., slight shock, from north to south, of very short duration. San Francisco, 16th, 1.46 p. m., light shock felt in city. Salinas City, Cal., light shocks of earthquakes felt twice during month. Poway, Cal., 11th, 3.30 p. m., slight shock.

SUNSETS.

The characteristics of the sky as indicative of fair or foul weather for the succeeding twenty-four hours, have been observed at all Signal Service stations. Reports from 185 stations show 5,690 observations to have been made, of